

What is claimed is:

1. A method of protection in a network having a first and a second transmission ring, the method comprising:

transmitting traffic to a plurality of remote nodes via the first and second transmission rings; and

globally selecting the first and second transmission rings to transmit and receive traffic based on alarm signals generated in the network.

2. The method of claim 1, further comprising:

summing all traffic received from the plurality of remote nodes.

3. A method of ring protection, comprising:

at a head end node:

feeding traffic on two transmission rings; and

summing all traffic received on the two transmission rings;

at remote nodes:

when a remote node detects a facility failure on one of the two transmission rings,

transmitting forward alarm signals on the one transmission ring and return alarm signals on the other transmission ring; and

globally selecting the one transmission ring to transmit traffic and the other transmission ring to receive traffic from the head end node; and when a remote node receives a forward alarm signal,

passing the forward alarm signal on the transmission ring on which the forward alarm signal was received; and

globally selecting the transmission ring on which the forward alarm signal was received to transmit traffic and the other transmission ring to receive traffic from the head end node.

4. The method of claim 3, further comprising:

when a remote node receives a return alarm signal,  
passing the return alarm signal on the transmission ring on which  
the return alarm signal was received; and  
globally selecting the transmission ring on which the return alarm  
signal was received to transmit traffic to the head end node and one of the  
two transmission rings to receive traffic from the head end node.

5. The method of claim 3, wherein when a remote node detects a facility failure on one of the two transmission rings comprises when a remote node receives a ring level failure alarm on one of the two transmission rings.
6. The method of claim 3, further comprising:  
at the head end node,  
terminating received forward and return alarm signals.
7. A method of ring protection at a remote node in a dual fed network, comprising:  
detecting a facility failure on a first transmission ring;  
transmitting a forward alarm signal on the first transmission ring and transmitting a return alarm signal on a second transmission ring;  
globally selecting the first transmission ring to transmit traffic to a head end node;  
and  
globally selecting the second transmission ring to receive traffic from the head end node.
8. The method of claim 7, further comprising:  
wherein the head end node sums traffic from the first and second transmission rings.
9. The method of claim 7, further comprising:  
wherein, the head end node terminates received forward and return alarm signals.

10. The method of claim 7, wherein detecting a facility failure on a first transmission ring comprises receiving a ring level failure alarm on a first transmission ring.

11. A method of ring protection at a remote node in a dual fed network, comprising:  
detecting a forward alarm signal on a first transmission ring;  
passing the forward alarm signal on the first transmission ring;  
globally selecting the first transmission ring to transmit traffic to a head end node;  
and  
globally selecting the second transmission ring to receive traffic from the head end node.

12. The method of claim 11, further comprising:  
wherein the head end node sums traffic from the first and second transmission rings.

13. The method of claim 11, further comprising:  
wherein, the head end node terminates received forward alarm signals.

14. A method of ring protection at a remote node in an access network having a head end node that dual feeds traffic on a first and a second transmission ring to a plurality of remote nodes, the method comprising:

when one of the plurality of remote nodes receives a return alarm signal,  
passing the return alarm signal on the transmission ring on which  
the return alarm signal was received; and

globally selecting the transmission ring on which the return alarm signal was received to transmit traffic to the head end node and one of the first or second transmission rings to receive traffic from the head end node.

15. A method of ring protection at a remote node in an access network having a head end node that dual feeds traffic on a first and a second transmission ring to a plurality of remote nodes, the method comprising:

when the remote node receives a forward alarm signal,

passing the forward alarm signal on the transmission ring on which the forward alarm signal was received; and

globally selecting the transmission ring on which the forward alarm signal was received to transmit traffic to the head end node and the other transmission ring to receive traffic from the head end node.

16. A method of ring protection in an asynchronous transfer mode (ATM) synchronous optical ring network, the method comprising:

at a central unit:

feeding traffic on two transmission rings; and

summing all traffic received on the two transmission rings;

at a plurality of remote units:

when one of the plurality of remote units detects a facility failure on one of the two transmission rings,

transmitting forward alarm signals on the one of the two transmission rings and return alarm signals on the other of the two transmission rings, wherein the forward and return alarm signals are ATM level operations, administration and maintenance cells; and

globally selecting the one of the two transmission rings to transmit traffic and the other of the two transmission rings to receive traffic from the central unit; and

when one of the plurality of remote units receives a forward alarm signal,

passing the forward alarm signal on the one of the two transmission rings on which the forward alarm signal was received; and

globally selecting the one of the two transmission rings on which the forward alarm signal was received to transmit traffic and the other of

the two transmission rings to receive traffic from the central unit.

17. The method of claim 16, further comprising:

when one of the plurality of remote units receives a return alarm signal,  
passing the return alarm signal on the one of the two transmission rings on which the return alarm signal was received; and  
globally selecting the one of the two transmission rings on which the return alarm signal was received to transmit traffic to the central unit and one of the two transmission rings to receive traffic from the central unit.

18. The method of claim 16, wherein when one of the plurality of remote units detects a facility failure on one of the two transmission rings comprises when one of the plurality of remote units receives a ring level failure alarm on one of the two transmission rings.

19. The method of claim 16, further comprising:

at the central unit,  
terminating received forward and return alarm signals.

20. A method of ring protection in a network having a central unit and a plurality of remote units, comprising:

at the central unit:

dual feeding traffic along a first and a second transmission ring to the plurality of remote units; and

combining traffic received on the first and second transmission rings; and

at the remote units:

detecting a facility failure on the first transmission ring;

transmitting a forward alarm signal on the first transmission ring;

transmitting a return alarm signal on the second transmission ring;

globally selecting the first transmission ring to transmit traffic;

globally selecting the second transmission ring to receive traffic;  
when a forward alarm signal is received, globally selecting the one of the first or second transmission rings carrying the forward alarm signal to transmit traffic and the other ring to receive traffic; and  
when a return alarm signal is received, globally selecting the one of the first or second transmission rings carrying the return alarm signal to transmit traffic and one of the first or second transmission rings to receive traffic.

21. The method of claim 20, wherein detecting a facility failure on the first transmission ring comprises receiving a ring level alarm signal on the first transmission ring.
22. The method of claim 20, further comprising:  
at the central unit,  
terminating received forward and return alarm signals.
23. A ring network, comprising:  
a headend node;  
a plurality of network nodes;  
wherein the headend node and the plurality of network nodes are interconnected via a number of ring segments which form a first and a second transmission ring, wherein the headend node dual feeds data to the plurality of network nodes on the first and second transmission rings;  
wherein when a failure is detected in one of the ring segments, adjacent ones of the plurality network nodes transmit forward and return alarm signals;  
wherein when a failure is detected or an alarm signal is received by one of the plurality of network nodes the receiving network node selects one of the first and second transmission rings carrying the failure data or forward alarm signal to transmit traffic and the other ring to receive traffic; and

wherein when a return alarm signal is received by one of the plurality of network nodes, the receiving network node selects the one of the first and second transmission rings carrying the return alarm signal to transmit traffic and selects one of the first or second transmission rings to receive traffic.

24. The network of claim 23, wherein alarm signals are terminated at the headend node.

25. A ring network, comprising:

a headend node;

a plurality of network nodes;

wherein the headend node and the plurality of network nodes are interconnected via a number of ring segments which form a first and a second transmission ring, wherein the headend node dual feeds data to the plurality of network nodes on the first and second transmission rings;

wherein when a facility failure is detected on the first transmission ring, adjacent network nodes transmit forward alarm signals on the first transmission ring and return alarm signals on the second transmission ring;

wherein when a failure is detected or a forward alarm signal is received by one of the plurality of network nodes the one network node selects the transmission ring carrying the failure or forward alarm signal to transmit traffic and the other ring to receive traffic; and

wherein when a return alarm signal is received by one of the plurality of network nodes, the receiving network node selects the ring carrying the return alarm signal to transmit traffic and one of the first or second transmission rings to receive traffic.

26. The network of claim 25, wherein the headend node terminates received alarm signals.

27. A ring network, comprising:

a plurality of network elements including a central unit and a number of remote units;

a plurality of ring segments coupled between adjacent network elements to form first and second transmission rings, wherein the central unit transmits data on the first transmission ring in the a first direction and transmits the same data on the second transmission ring in a second direction;

wherein when a failure is detected on one of the first or second transmission rings, adjacent network elements transmit a forward alarm signal on the transmission ring on which the failure was detected and a return alarm signal on the other transmission ring;

wherein when a failure is detected or a forward alarm signal is received by one of the number of remote units, the receiving remote unit selects the ring carrying the failure data or alarm signal to transmit traffic and selects the other ring to receive traffic; and

wherein when a return alarm signal is received by one of the number of remote units, the receiving remote unit selects the ring carrying the defect signal to transmit traffic and one of the first or second transmission rings to receive traffic.

28. The network of claim 27, wherein alarm signals are terminated at the central unit.

29. A ring network, comprising:

a plurality of network elements including a central unit and a number of remote units;

a plurality of ring segments coupled between adjacent network elements to form first and second transmission rings, wherein the central unit transmits data on the first transmission ring in the clockwise direction and transmits the same data on the second transmission ring in the counter clockwise direction;

wherein when a failure is detected on both of the first and second transmission rings, adjacent network elements transmit a forward alarm signal on the transmission ring on which the network element detected a failure and a return alarm signal on the other transmission ring; and

wherein when a failure is detected or a forward alarm signal is received by one of the number of remote units, the receiving remote unit selects the ring carrying the failure data or alarm signal to transmit traffic and selects the other ring to receive traffic.

30. The network of claim 29, wherein alarm signals are terminated at the central unit.

31. A method of ring protection at a remote node in an access network having a head end node that dual feeds traffic on a first and a second transmission ring to a plurality of remote nodes, the method comprising:

when one of the plurality of remote nodes receives a return alarm signal,

passing the return alarm signal on the transmission ring on which

the return alarm signal was received;

globally selecting the transmission ring on which the return alarm signal was received to transmit traffic to the head end node; and

arbitrarily selecting one of the first or second transmission rings to receive traffic from the head end node.